

Message Text

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ERDA FOR MORABITO, HUNTER

STATE PASS TO GETEWSKI
HANFORD ENGINEERING DEVELOPMENT LABORATORY
P.O. BOX 1970
RICHLAND, WASHINGTON 99352

E.O. 11652: N/A
TAGS: TECH, JA
SUBJECT: US-JAPAN MTG LEAK BEFORE BREAK & ISI, OCT 3-HEDL

REF: SEPT 7 TELECON GEJEWSKI-HENoch

1. FOLLOWING IS ABSTRACT OF TOPICS ON PIPING INTEGRITY
RATIONALE JUST RECEIVED FROM PNC PER AGREEMENT REFTTEL:

A. INTRODUCTION/OVERVIEW
THE EVALUATION OF PHTS (PRIMARY HEAT TRANSPORT SYSTEM)
PIPING INTEGRITY IS ONE OF THE MAIN THEMES IN THE COURSE
OF THE SAFETY EVALUATION OF THE LOOP-TYPE LMFBR PLANT,
BECAUSE THE JAPANESE PORTO-TYPE FBR, MONJU EMPLOYS THE
LOOP DESIGN, LIKE THE CRBRP OF THE USA. PNC WILL PRESENT
THE EVALUATION SYSTEM OF PIPING INTEGRITY ALONG WITH
FOLLOWING TOPICS TO OVERVIEW THE THEME:
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- 1) APPROACH TO LOPI (LOSS OF PIPING INTEGRITY) IN THE
SAFETY EVALUATION OF THE EXPERIMENTAL FBR JOYO.
- 2) PNC'S DESIGN PHILOSOPHY CONCERNING LOPI ACCOMMODATION
FOR MONJU.

B. PHTS (PRIMARY HEAT TRANSPORT SYSTEM) DESCRIPTION
PNC WILL PRESENT THE SPECIFICATION AND PIPING DESIGN
ETC. OF THE PHTS OF MONJU WHICH IS CURRENTLY UNDER
DESIGN.

C. PIPING INTEGRITY ASSURANCE

1. QUALITY ASSURANCE

PNC WILL PRESENT THE CONCEPT OF QUALITY ASSURANCE FOR
CONSTRUCTION OF THE MONJU PHTS PIPING.

2. PIPING STRESS ANALYSIS

PNC WILL PRESENT THE FOLLOWING TWO TOPICS WHICH COVER
THE PRESENT STATUS AND R&D PROGRAM OF THE STRESS ANALYSIS
FOR MONJU PHTS PIPING DESIGN.

1) CONVENTIONAL ELASTIC STRESS ANALYSIS WITH SIMPLIFIED
STRESS INDICES METHOD AND ITS RESULTS.

2) DEVELOPMENT OF ELASTIC STRESS ANALYSIS METHODS WITH
DETAILED STRESS INDICES METHOD.

3. PIPING MATERIAL CRACK GROWTH FRACTURE MECHANICS

PNC WILL CONTRIBUTE TO THE DISCUSSIONS OF THE TOPICS
BASED ON THE LITERATURE SURVEY OF THE FRACTURE MECHANICS
OF LOW-CYCLE FATIGUE CRACK GROWTH OF TYPE 304 STAINLESS
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STEEL WHICH IS ONE OF THE PIPING MATERIALS FOR THE
MONJU PHTS.

D. LEAK BEFORE BREAK--EXPERIMENTAL AND ANALYTICAL RESULTS

1. CRACK GROWTH MORPHOLOGY

PNC WILL PRESENT THE FOLLOWING TOPICS BASED ON THE
RESULTS OF MANY PIPING COMPONENTS TESTS PERFORMED AT
THE O-ARAI ENGINEERING CENTER.

1) MORPHOLOGY OF THE LOW-CYCLE FATIGUE CRACK GROWTH
OF THE WELDED ELBOW UNDER CYCLIC BENDING MOMENT LOADS.

2) MORPHOLOGY OF THE LOW-CYCLE FATIGUE CRACK GROWTH
OF THE OTHER PIPING COMPONENTS UNDER CYCLIC BEINDING
MOMENT LOADS.

3) CRACK GROWTH MORPHOLOGY OF THE THERMAL CYCLE FATIGUE
FAILURE OF THE PIPE CAUSED BY THE TEMPERATURE CHANGES
OF THE INTERNAL FLUID.

2. CRITICAL CRACK SIZE

PNC WILL PRESENT FOLLOWING TOPICS BASED ON THE RESULTS OF THE EXPERIMENTS WITH SCALED-DOWN MODELS OF THE TYPE 304 STAINLESS STEEL PIPING:

- 1) CRITICAL CRACK SIZE AGAINST INTERNAL PRESSURE LOADING.
 - 2) CRITICAL CRACK SIZE AGAINST WEIGHT LOADING AT THE BREAK OF A SUPPORT.
 3. CORROSION EFFECTS OF LEAKING SODIUM
- PNC WILL PRESENT FOLLOWING TOPICS:

- 1) EXPERIENCES OF CORROSION BY LEAKING SODIUM IN THE SODIUM LOOPS AT THE O-ARAI ENGINEERING CENTER.
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- 2) PLANNING OF EXPERIMENTS ON THE CORROSION EFFECTS OF LEAKING SODIUM.

2. AS INDICATED REFTTEL, PNC EXPECTS FULL PAPERS COMPLETE WITHIN 10 DAYS. EMBASSY WILL FORWARD TO RDD AND HEDL UPON RECEIPT.

3. PNC WILL HAVE AVAILABLE VG MACHINE AND 35 MM SLIDE PROJECTOR.

MANSFIELD

NOTE BY OC/T: PASSED ABOVE ADDEE.

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